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THE METROPOLITAN
MUSEUM OF ART

THE ROOM OF
ANCIENT
GLASS



MCMXVI



FRONTISPIECE: BLOWN GLASS VASES OF VARIOUS SHAPES

THE METROPOLITAN MUSEUM
OF ART

THE ROOM OF
ANCIENT
GLASS

BY

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M C M X V I

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FIGURE 1. PLAQUE ORNAMENTED WITH RELIEFS. SACRIFICIAL PROCESSION

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FIGURE 2

THE ROOM OF ANCIENT GLASS

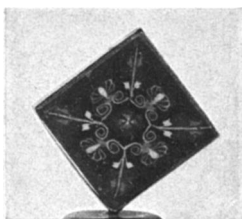


FIGURE 3.
MOSAIC PLAQUE

THE collection of ancient glass in the Metropolitan Museum now ranks as the richest collection in the world as well as one of the most important. The Museum has indeed had exceptional opportunities in that direction. The collection of antiquities from Cyprus acquired from General L. P. di Cesnola in 1872 contained over 1,700 pieces of ancient glass.¹ In 1881, Mr. Henry G. Marquand purchased and then presented to the Museum the famous Charvet Collection² consisting of about 350 pieces, carefully selected by M. Charvet during his lifetime, so as to constitute the finest private collection in France. In 1893 an important group of vases from Syria was purchased; and in 1910 Mr. Morgan lent to the Museum the well-known Gréau Collection³ of ancient glass, consisting of about 5,000 pieces, of which more than 1,000 are whole vases, the rest fragments. A portion of this collection was formerly exhibited in the South Kensington Museum, London.

The Moore Collection also contains many valuable pieces of ancient glass, but as this is a restricted collection, the glass could not be separated from the other objects.

It was felt that with such a richness of

material a special room for the exhibition of ancient glass was needed, and for this purpose Gallery 37, adjoining the Second Vase Room, has been fitted up. Even in that space it was found impossible to exhibit the whole of the collections; but as they contained many duplicates, it was easy to make an adequate selection, which was still entirely representative. The arrangement of the material in Gallery 37 is as follows: The Cesnola Collection, the special interest of which is that it was all found in Cyprus, has been kept together and placed in the North and one of the West wall cases (1-11). In the five floor cases are accommodated the most important pieces of the Charvet and Gréau Collections, as well as some of the Syrian vases, arranged systematically according to their various fabrics. The wall cases of the South, East, and West walls (12-21) contain the rest of the Charvet and Gréau Collections, also arranged according to fabrics. The two table cases have been reserved for the exhibition of smaller objects, such as beads, reliefs, mosaics, and more important fragments.

Ancient glass is a branch of ancient art which has hitherto received rather scant attention. The reason is probably that mythological scenes or inscriptions are comparatively rare on glass vases, and their study is therefore not so rich in archaeological interest as is that of other minor arts, such as painted vases or gems. The result is that the classification and dating of ancient glass have not been so thoroughly established as those of other branches of Greek and Roman art. Recently, however, Kisa in a three-volume book entitled *Das Glas im Altertume* (Leipzig, 1908) has published the first really scientific and comprehensive treatment of ancient glass.¹ It is a work

¹ See Atlas of the Cesnola Collection, Vol. III.

² Published by W. Froehner: *La Verrerie Antique, Description de la Collection Charvet*, 1879. From this catalogue have been taken the provenances assigned to the vases of this collection.

³ Published in a monumental work by W. Froehner: *Collection Julien Gréau, Verrerie Antique appartenant à M. John Pierpont Morgan*, 1903. From this catalogue have been taken the provenances assigned to the vases of this collection.

¹ A shorter account of ancient glass was published by Kisa in 1899 in his introduction to the volume entitled *Die antiken Gläser der Frau Maria vom Rath*.

which represents the fruits of the study of a lifetime and sums up our present knowledge of this subject. By making use of all available evidence Kisa has succeeded in establishing a satisfactory classification of the material, which though it still contains many gaps, owing chiefly to the deplorable lack of careful excavation records, supplies at least a working basis.

The following short account of the history of ancient glass and its various fabrics, based largely on the data supplied by Kisa in his book, may serve as a convenient guide to the collection in this Museum.

Egypt seems to have been not only the place where glass was invented, but the great centre of glass industry throughout antiquity. At least, it is in this country that a glassy substance first appears. It occurs at first not as glass proper, but as glaze, in which form it has been found at a very early period. Glazed beads, for instance, at least as early as the middle of the predynastic period (about 3600–3500 B.C.) have been found by Petrie and others at Nagada and Ballas and other sites. In the early dynasties glaze is commonly found on tiles, figurines, and beads,¹ and its use is continuous throughout the history of Egypt. In the XVIII dynasty (about 1500 B.C.) glass proper occurs for the first time and vases of the primitive variegated type are found from this period till the XXVI dynasty (about 600 B.C.). Moreover, factories of glass vases or traces of such have been discovered at various sites, such as Tel el Amarna (XVIII dynasty = about 1500 B.C.), the Ramesseum at Thebes (XIX dynasty = about 1300 B.C.), and Lisht² (XX–XXII dynasties = about 1200–900 B.C.), a clear proof that glass was manufactured in Egypt and not imported. Subsequently, vases of exactly the same technique are found in Greek lands and in Etruscan tombs of the sixth to the fourth centuries B.C., and after that in Cyprus and elsewhere in the Hellenistic and Roman

periods. These are most probably either of Egyptian manufacture and exported, or native imitations of the Egyptian ware.

The popular theory that the Phoenicians invented glass is based largely on Pliny's somewhat confused account given in his *Historia Naturalis*, XXXVI, 26, 65, where he tells the story of some Phoenician merchants who encamped on the shore and rested their cooking pots on blocks of natron, and afterwards found glass produced by the union of the alkali and the sand at a high temperature. This theory, however, does not seem to be supported by sufficient evidence, since neither glass factories nor deposits of glass earlier than the fifth century B.C. have been unearthed in Phoenicia.

PRIMITIVE VARIEGATED GLASS

Our collection of this primitive variegated glass is very representative; it is exhibited in Floor Case I and in the East Wall Case. These vases were not blown, but modeled by hand over a core; while the vase was still hot, threads of colored glass were applied on the surface and incorporated by rolling, the various patterns being produced by dragging the surface in different directions with a sharp instrument. Three varieties can be distinguished dating from three different periods:

(1) Early Egyptian of the XVIII to XXVI dynasties (about 1500–600 B.C.). These examples, especially those of the XVIII dynasty, are distinguished for the beauty of their coloring and the perfection of their technique (fig. 4).

(2) The sixth to the fourth centuries B.C., found in graves in Asia Minor, the Greek Islands, Greece, and Italy. The shapes are different and the colors, though brilliant, are not so bright and pure as in the earlier examples (see fig. 6).

(3) Hellenistic and Roman periods. These are much coarser in execution and are often supplied with handles of fantastic shapes (see fig. 5).

As we see from these vases, glass was put to practical use long before the invention of the blowing tube. But at best the method of building up vases by hand must have been slow and clumsy, and the result

¹ See the Abydos material from the Osiris temenos belonging to the I dynasty in Gallery 1 of the Egyptian section.

² For the Lisht material, which was found by the Metropolitan Museum expedition, see Gallery 6 of the Egyptian section.



FIGURE 4. EARLY EGYPTIAN GLASS, XVIII-XX DYNASTIES



FIGURE 5. HELLENISTIC AND ROMAN PERIODS



FIGURE 6. SIXTH TO FOURTH CENTURIES B.C.

is that the use of glass vessels during this early period was very limited, clay vases of every description supplying the needs of every day. The invention of the blowing-tube worked a revolution in that direction. With this easy and rapid means of manufacture, glass now began to usurp the place of clay and was more and more commonly employed for the various uses to which it is put at the present day. Where and when this great invention took place is still a moot question. For a long time it was thought that the process of blowing glass was known in Egypt as early as the XII dynasty, scenes such as the well-known relief of Beni Hasan being interpreted as representing men blowing glass. This is, however, not possible, as no blown glass of that period has been found, and the Beni Hasan relief and similar scenes have now been satisfactorily shown to be connected with metal works (L. Griffith, *Archæological Survey of Egypt, Beni Hasan, IV*). All that can be said at present is that the art of blowing glass appears to have been invented some time during the second or the first century B.C., probably somewhere in the Greek Orient. Alexandria was at first the chief center of the industry, but with the spread of the Roman Empire places for the manufacture of glass were established not only throughout the East and the West, but also in the North, in France, Germany, and England, where several ancient glass factories have been discovered and where, to judge from the great quantities of glass found, the industry was particularly flourishing.

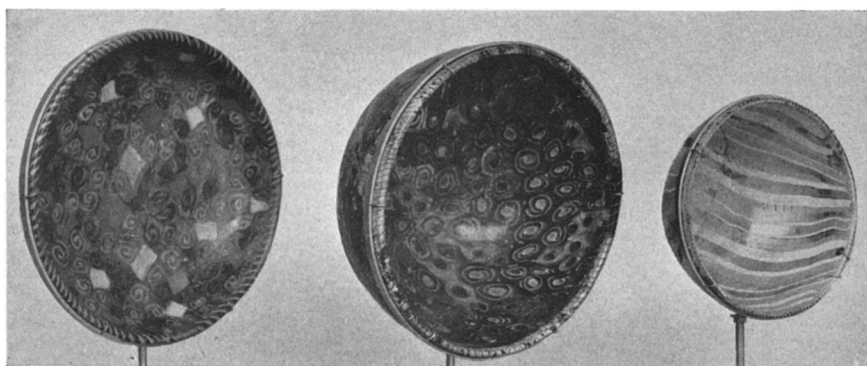
PLAIN BLOWN GLASS

Most of this blown glass is quite plain, without decoration. It occurs both colorless and colored, the favorite colors employed being different shades of blue, red, and green, amber, black, and opaque white (see Wall Case 12). The commonest method of producing these colors was the addition of iron or copper oxides. The shapes of the cases vary almost indefinitely, the most prevalent forms being jugs and bottles of various proportions, bowls, tumblers, and plates (*Frontispiece*). The custom of depositing these vases in graves as offerings

to the dead accounts for their preservation in such numbers. It is often possible to date such graves through the finding of coins, which were added to the other offerings in conformity with the custom of supplying the dead with money to pay Charon, the ferryman of the lower world.

Besides the obvious uses of glass vessels, those of the toilet and the table, for which the great majority must have served, there is one which requires special mention. This is the employment of glass urns (see center vase on *frontispiece*) to contain the ashes of the dead. This custom prevailed from the first to the third century A.D. in Gaul, Brittany, Germany, Italy, Spain, and North Africa; in Greece, Egypt, and the Orient it is unknown. The urns were of various forms and were generally made of thick, greenish glass. After the third century burial began to take the place of cremation, and the glass urns gradually disappear.

The bulk of the Cesnola Collection belongs to the plain blown variety of glass and has accordingly been classified according to the shapes of the vases. The chief attraction of this glass for us nowadays is the fact that in many cases it is iridescent and thus shows the most wonderful combination of colors, which become quite dazzling when touched by the sunlight. This iridescence was of course unintentional on the part of the makers, and is produced by the partial disintegration of the glass, caused by its exposure to damp and oxidation in the graves. Through this disintegration the internal structure of the glass is exposed, which thus appears as a scaly formation. The decomposition of light as it passes through the various films and the partial reflection from the back layers produce that intermingling of brilliant colors, called iridescence, which has changed a common piece of glass into an object of great artistic beauty. It should be remembered that this iridescence, though valued so highly by collectors, signifies a danger to the conservation of the glass which finally leads to its destruction. The process is delayed, but not totally arrested, by the removal of the vases from the damp graves into the light, so that we



A

B

C

FIGURE 7. MILLEFIORI OR MOSAIC BOWLS

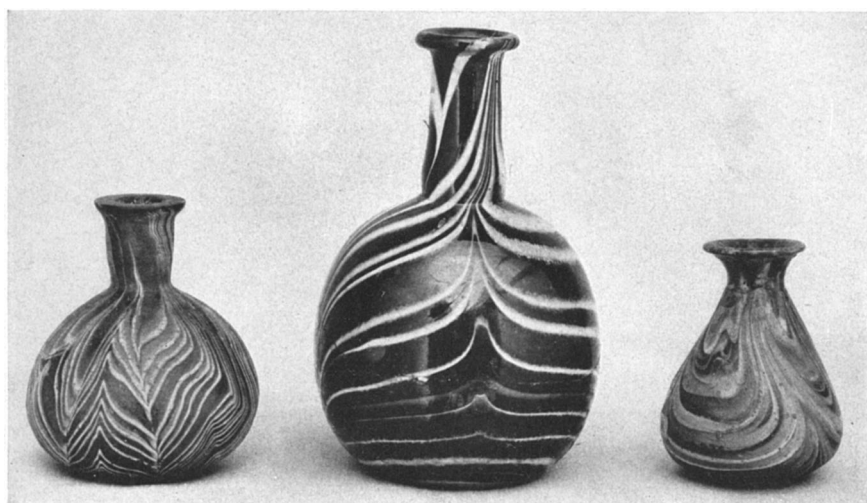


FIGURE 8. ONYX GLASS



FIGURE 9. CUPS PAINTED WITH ENAMEL COLORS

have the satisfaction of knowing that by placing the glass in our Museum cases we are doing the best thing for it. Modern iridescent glass is produced artificially, generally by spraying some acid on the surface. The fact that ancient iridescence depends solely on the effects of light is shown by wetting the surface of the vessel, when the iridescence will completely disappear until the moisture dries again.

Besides the plain blown glass, the ancients used glass decorated in various ways. The chief varieties are mosaic glass, glass blown in moulds, vases with threads of glass applied plastically, cut glass, and painted glass. These several varieties are all represented in our collection and have been grouped in the floor cases and the South wall cases.

MOSAIC GLASS

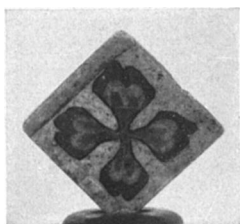


FIGURE 10.
MOSAIC PLAQUE

The invention of mosaic glass is, like that of the primitive variegated type, due to Egypt. Here this art appears already fully developed in the Ptolemaic period. In the Egyptian section (Gallery 9) will be found a number of examples which show this technique in a high state of perfection. The classical collection also contains a number of such plaques (see Table Case A) dating probably from the early Imperial period. Their technique is as follows: Pieces of glass of different colors were drawn out into thin threads which were placed together according to a given pattern, fused so as to form a compact rod, and then drawn out still farther if the pattern was to be reduced in size. By cutting up this rod into transverse sections, a series of small plaques was obtained, each of which reproduced the same pattern. These were

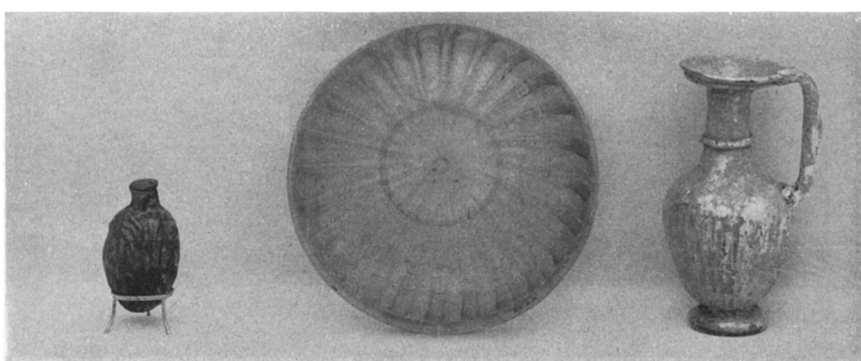
backed with plates of glass and could then be used for inlaying (see figs. 3 and 10). But this technique was not confined merely to small plaques; it was used for the production of the so-called Millefiori or Mosaic vases, which are among the finest products of the ancient glass industry. In these, various sections, produced in a manner similar to that just described, were placed together and pressed into a mould. They were there joined to each other, either merely by the application of heat, which fused them at the edges, or by blowing a bubble of clear glass on the inside of the vase. A variety in the patterns was obtained both by dipping the rods into liquid glass, thus obtaining a coating of a different color, and by cutting up the rods obliquely and lengthwise instead of transversely. In sections cut lengthwise the various threads which make up the glass rod appear as long bands, and vases made up from these are called *banded* glass (fig. 7c). In these some of the rods were twisted spirally and their sections thus show an intertwined pattern. Another pattern was obtained by "flashing" a plate of glass, that is, dipping it one or more times into liquid glass, and then rolling it spirally. Here the sections appear as spirals, which could be further expanded by blowing. The chief charm of these mosaic vases, which consist chiefly of bowls, is the fact that the pattern goes right through, so that when held against the light the beauty of the colors and the effective contrast between the transparent and opaque pieces of glass are seen to greatest advantage. The most flourishing period of these vases appears to have been the beginning of the first century A.D., and, to judge from the places where they have been found, they appear to have been manufactured chiefly in the Orient and in Italy. It is possible that these vases are to be identified with the *Murrina* or *Murra* mentioned in such enthusiastic terms by ancient authors. The Venetians of the Renaissance appear to have greatly admired these mosaic bowls and imitated them extensively. These examples can generally be distinguished easily from the ancient ones by their cruder coloring. The Venetians invented the name Mille-



A

B

C



D

E

F



G

FIGURE 11. MOULDED GLASS

fiori (a thousand flowers), the varied pattern resembling a bunch of flowers.

ONYX GLASS

In the class of mosaic vases belong also the so-called Onyx vases, which have the appearance of veined marble (fig. 8). They are produced by melting glass threads of different colors and thickness to form a ball and allowing them to flow into each other while the vessel was blown, the pattern coming out according to the will and skill of the blower. Like the Millefiori bowls, they belong chiefly to the first century A.D. Examples of Millefiori and Onyx vases have been assembled in Floor Case II. The two Millefiori bowls of the Charvet-Marquand Collection (fig. 7 A, B) are among the finest specimens in existence.

VASES PAINTED WITH ENAMEL COLORS

In the same case are also exhibited a number of vases painted with enamel colors. In these the insertion of opaque threads into the actual substance of the vessel, as practised in the primitive variegated glass (see Floor Case I), was imitated by the application of the pattern on the surface of the vessel by means of enamel colors, laid on with the brush and fixed by heat. They consist chiefly of small cups and bottles (fig. 9); but a noteworthy example is the beautiful urn, purchased in 1910, which has been placed in the center of the case (fig. 19). These vases are chiefly found on the Rhine, especially in Cologne, and belong to the third and fourth centuries A.D. They were, like the Millefiori bowls, imitated by the Venetians.

PAINTED AND GILT GLASS

Besides enamel colors for decorative bands, we find mineral colors employed for painting various scenes on glass. As these

colors could not be fixed by heat, they have in a great many cases disappeared. The designs for these paintings were lightly engraved before the application of the colors. The earliest examples of such painted glass come from Egypt, but here the contours are not engraved. The classical examples mostly belong to the third and fourth centuries A.D. There are no specimens in our collection.

Of great importance is the gilt glass, which consists mostly of round disks which formed the bases of bowls, popularly known by their Italian name "vetri a fondi d'oro." The great majority of them have been found in the Christian catacombs, inserted in the walls, and belong to the third to the fifth centuries A.D. The process appears to have been as follows: While the glass was still hot it was covered with gold leaf. The design was then engraved on it with a sharp instrument, and the superfluous gold leaf removed from the background.

The vessel was then dipped into liquid transparent glass, so that the gold design appears embedded between two layers of glass. The Museum has just acquired a fine example, which will be illustrated and described in detail in a subsequent number of the BULLETIN.

MOULDED GLASS

The practice of blowing glass in moulds was prevalent from the invention of the blowing-tube to the fifth century A.D. The process was as follows: The moulds were made from a model, cut into halves, and then joined again. When the glass was blown into the mould this could easily be removed and used again, so that the process could be repeated indefinitely. The neck, lip, foot, and handle were added by hand. Moulded vases are either shaped in imitation of human heads, animals, and various fruits (fig. 11 B, D, G), or are deco-



FIGURE 12. BARREL
JUG



FIGURE 13. BOTTLES DECORATED WITH VARIOUS EMBLEMS AND IMPLEMENTS



FIGURE 14. SIDONIAN CUP, SIGNED
BY THE MAKER ENNION



FIGURE 15. SIDONIAN CUP, SIGNED
BY THE MAKER MEGAS

rated with figures and ornaments in relief. Among the latter special mention must be made of the following classes:

(1) Sidonian vases, consisting chiefly of small angular bottles decorated with various emblems and implements (see fig. 13), cups, and jugs, many of which bear the inscription of the maker. The name which occurs most frequently is Ennion (figs. 14, 16, 25); others are Artas, Neikon, Eirenaïos, and Megas (fig. 15). That these artists took great pride in their work is shown by inscriptions such as *μνησθή ὁ ἀγοράζων* (let the buyer remember), added after the signature, which formula we may take to be the ancient equivalent for our modern "beware of imitations." From the fact that the makers sometimes expressly call themselves Sidonians, it appears that these vases were made in Sidon, though they were afterwards also imitated in Italy. They are found from the first century B.C. to the first century A.D.

(2) Cylindrical cups with inscriptions relating to games. The most frequent is *λάβε τὴν νείκεν*, take the victory (fig. 18). These cups belong to the same period as the Sidonian vases, and also originated in the Greek Orient.

(3) Cups ornamented with scenes from the circus and the arena. The shapes are influenced by the Roman *sigillata* ware. These were made in the North—in Gaul or England—during the first half of the second century A.D. The example in our collection (fig. 17) comes from Montagnole,

near Chambéry, France, and represents gladiatorial combats. The names of the combatants are inscribed.

(4) Rectangular flasks, commonly known as "Mercury" flasks (see fig. 21). They are often supplied with factory marks on the bottom, among which the most frequent are Mercury, Victoria, various animals, geometrical figures, and inscriptions. Such

flasks have been found in tombs of the second to fourth centuries A.D.

(5) Barrel jugs. These jugs (see fig. 12) were produced chiefly in Gaul from the second to the fourth century A.D. They generally bear a factory mark, such as the name of the maker, on the bottom. The name Frontinus occurs the most frequently, so that we may suppose him to have been the originator of this class of vases.

(6) Ribbed vases (see fig. 11 E, F). Jugs, bottles, and bowls of various forms were produced with ribbed decoration from the first century A.D. In Gaul and Germany they were especially pop-

ular during the third century A.D.

(7) Cylindrical and prismatic jugs (see fig. 11 A, C). These vases are generally made of heavy, greenish glass and often bear factory marks on the bottom. They occur from the first century B.C. to the third century A.D.

(8) Cylindrical flasks and round bottles, with handles roughly shaped in imitation of dolphins (see fig. 20). The handles were used for the insertion of little bronze chains, like those still preserved on some of



FIGURE 16. SIDONIAN JUG, SIGNED BY THE MAKER ENNION



FIGURE 19. LARGE VASE DECORATED WITH ENAMEL COLORS AND RELIEFS



FIGURE 17. GALLIC CUP ORNAMENTED WITH GLADIATORIAL COMBATS



FIGURE 18. INSCRIBED CUP

our examples. These vases occur from the first century A.D., the cylindrical flasks lasting until the third, and the round bottles until the fourth century A.D.

(9) Round and angular jugs with impressed reliefs consisting generally of Jew-

hand. The vessel was grooved by holding a wooden instrument against the glass bubble while it was being blown (see fig. 22), or it was pinched with a pair of tongs and thus supplied with a series of spikes (see fig. 23).



FIGURE 20. VASE
WITH DOLPHIN
HANDLES



FIGURE 21. "MERCURY"
FLASK



FIGURE 22. GROOVED
VASE



FIGURE 23. SPIKED VASE

ish emblems, such as the seven-branched candlestick, the temple-door, and the palm. These are found in Palestine and are apparently products of Jewish manufacture of the fourth century A.D.

Of these nine varieties examples belonging to the first four will be found in Floor Case III; the rest have been placed in the south wall cases nearest this floor case (17 and 18).

GROOVED AND SPIKED VASES

In addition to vases fashioned into various shapes by means of moulds, we find some which have been thus ornamented by

VASES WITH THREADS OF GLASS APPLIED PLASTICALLY

The practice of drawing out glass into thin threads and using them for the decoration of vases was, as we have seen, already practised by the Egyptians; but here the threads were completely embodied in the substance of the vases, so as to give the appearance of inlay work. In the early Imperial period (first century A.D.), the use of such threads for plastic decoration was first employed. In the beginning we may suppose that it was applied only around the neck, in imitation of the string used for fastening

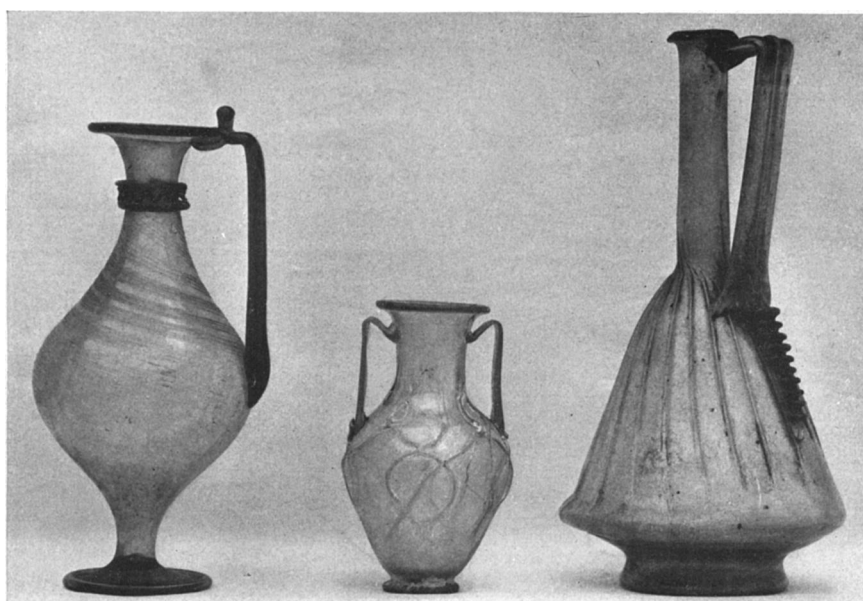


FIGURE 24. VASES WITH THREADS OF GLASS APPLIED PLASTICALLY

the stoppers of vessels; but its decorative quality was quickly realized and it was soon used to cover the whole body of the vase. Once introduced, its popularity continued throughout the period of the ancient glass industry. The process consisted of attaching little balls of glass to the vase while still hot and then drawing them out on its surface to form various patterns. Of these the commonest are horizontal, vertical, and spiral bands, zigzag and wavy lines, and network (see fig. 24). Variety was sometimes given to the pattern by pressing the threads of glass flat or indenting them in various ways; the glass threads are generally of a different color from the vase itself so that they detach themselves effectively from the ground.

VASES WITH SERPENT-LIKE BANDS

Under this class of decoration two fabrics should be specially noted—the vases with serpent-like bands and the Syrian lekythoi. The former occur in the Rhine country and in Gaul. They are a small class of vases, distinguished for their graceful shapes and for the technical perfection of their decoration. They were produced from the first to the fourth century A.D., but the best examples belong to the second century A.D. Two excellent specimens belong to the Charvet-Marquand Collection and are exhibited in Floor Case IV (vignette on cover and fig. 28).

SYRIAN LEKYTHOI

The Syrian lekythoi consist of multiple vases elaborately ornamented with fantastic handles and decoration of threads of glass. They are found mostly in Syrian tombs of the fourth century A.D., but they also occur in Gaul and in the Rhine country. A representative collection of these is exhibited in Floor Case V (fig. 26).



FIGURE 25. SIDONIAN VASE, SIGNED BY THE MAKER ENNION

VASES WITH RELIEFS

In connection with the plastic application of threads of glass an allied form of decoration must be mentioned—that of dropping liquid glass balls on the surface of the vessel and either leaving them plain or working them in relief. When left plain, they appear as a number of patches which either protrude or are pressed in (see fig. 27); these are generally of a different color from the vessel itself, the idea having probably originated from the costly “*potioria gemmata*,” the gold and silver cups studded with cameos and gems, which were a favorite form of luxury with the wealthy Romans. A good example of the

complicated process of working such patches into reliefs, while the mass was still soft enough to receive impressions, is a vase belonging to the Gréau Collection, which shows elaborate garlands thus worked (in Wall Case 17). Sometimes the reliefs were worked separately and then applied on the heated vessel. Examples of reliefs made for this purpose will be found in Table

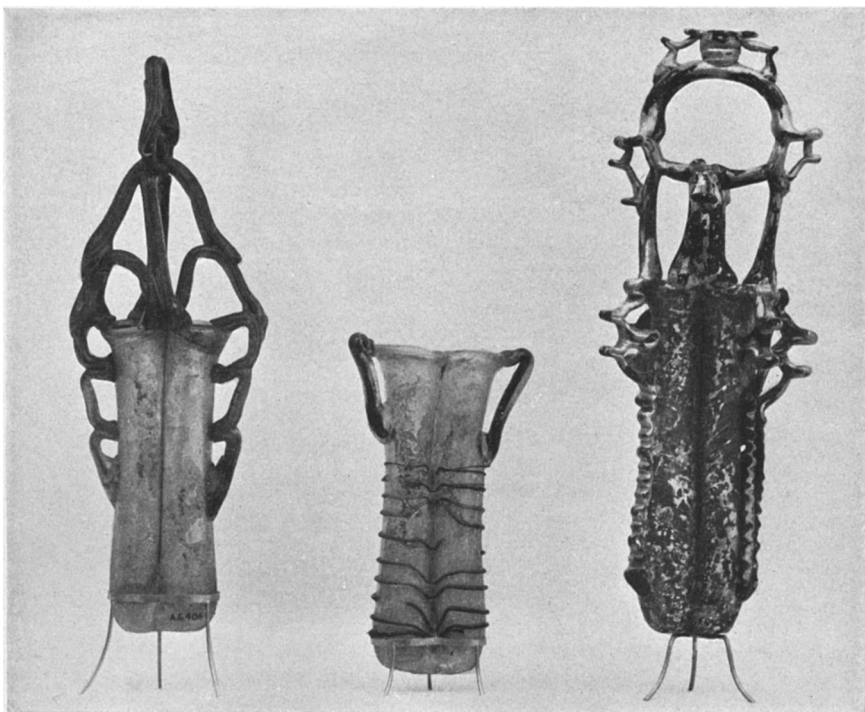


FIGURE 26. SYRIAN LEKYTHOI



FIGURE 27. VASE ORNAMENTED WITH
COLORED PATCHES OF GLASS

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Case A (fig. 30), while the vase illustrated in fig. 19 shows such reliefs in place.

Another method of decorating the surface of a glass vessel with reliefs was in imitation of cameos. This was done by welding two glass plates of different colors together and cutting one plastically. A vessel of dark transparent glass was dipped

our collection the technique is represented by only a few fragments (see figs. 1, 2), which have been placed in Table Case A.

CUT GLASS

All the methods of ornamentation hitherto described are based upon the great plia-



FIGURE 28. JUG WITH SERPENT-LIKE BANDS

into liquid glass, generally of opaque white color, so that this formed a coating over the entire surface. When this cooled and hardened, reliefs could be cut in, the dark background being laid bare between the figures and shimmering through the thinner layers. Owing to the brittle nature of glass, this process was attended with much difficulty and vases of this class are rare. They were produced during the first century A.D., but seem to have died out at the end of that century, the art being henceforth retained only for glass cameos. The best-known example is the beautiful Portland Vase in the British Museum. Several fine vases from Pompeii are in the Naples Museum. In

bility of glass at a high temperature. On the other hand, its hardness at a normal temperature lends itself to another form of decoration—that of cutting. This was applied by means of a metal or stone instrument with points of various forms, which was worked on the surface of the glass by means of a wheel or free hand. The simplest decoration consists of horizontal bands and was in use from the first to the fifth century A.D. In the third, fourth, and fifth centuries more elaborate ornamentations were introduced, consisting either of decorative designs or figured scenes (see fig. 29); inscriptions also occur. Among the figured representations the most fre-

quent are mythological and Christian subjects; landscapes; hunting, dancing, and circus scenes. The execution of these is sometimes very coarse; especially so are the dancing groups, which are probably of Rhenish manufacture. Subjects of interest illustrated by the examples in our collection are the Hunt of Adonis, the Contest of Herakles and the Lerneian Hydra, Moses striking Water from the Rock, and the Three Men in the Fiery Furnace. These and other examples of cut glass are placed in Floor Case V and Table Case B.

BEADS

No account of ancient glass would be complete without some mention of glass beads, which have been a popular product from early Egyptian times to our modern days. In shape, color, ornamentation, and technique they are of almost infinite variety, but the following rough system of chronology can be observed. Glazed beads occur, as has already been mentioned, from the pre-dynastic period. In the eighteenth dynasty (about 1500 B.C.) plain glass beads first make their appearance. From 1000-300 B.C. and even later a favor-

ite variety is the so-called "eyed" beads which are found in various parts of Europe, as well as in Egypt. Plain or concentric circles of yellow, blue, or white glass are inserted in the beads by a method similar to that of the glass threads in the primitive vases, while occasionally drops of colored glass are left to protrude from the surface. Instead of in concentric circles the pattern is sometimes arranged in spiral or zigzag lines. In the Roman Imperial period many new types of beads were introduced, such as the mosaic, the marbled, the Millefiori, and that with threads of glass applied plastically, to correspond with the various new methods employed in the manufacture of glass vases. Plain and ribbed beads occur continuously both in pre-Roman and Roman times. But it should be noticed that during the pre-Roman period the beads were formed by twisting a glass thread round a wire, the place where the thread is nipped off being often clearly visible. In Roman times, on the other hand, the beads are all cut and can thus be easily distinguished from the earlier varieties.



FIGURE 29. CUT GLASS



FIGURE 30. GLASS RELIEF